



**UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET
09/292,132	04/14/99	AKRAM	S MI22-1171

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EXAMINER

MULPURI, S

ART UNIT

PAPER NUMBER

2812

DATE MAILED:

05/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/292,132

Applicant(s)
Akram et al

Examiner
S. Mulpuri

Group Art Unit
2812



☒ Responsive to communication(s) filed on Feb 14, 1900

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 51-77 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 51-77 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8.10

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

This action is in response to the applicant's response filed on 2/14/00 and IDS filed on 12/16/99 and 1/31/00.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 51-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan '525, in combination with Weitek, Pan '435, Sugino et al or Suzuki et al.

Pan '525 discloses a method of forming transistor gate by the following process steps: Forming gate oxide; diffusing fluorine into gate oxide gate; incorporating fluorine under the gate electrode into the portion of gate oxide 100-500 angstroms(see abstract, 1D-1 E, , col. 5, lines 15-40).

Pan '525 does not disclose diffusing chlorine into gate oxide. Weitek discloses diffusing chlorine, as alternative material to fluorine into gate oxide "26"(see col.4, lines 34-42). It would have been obvious to one of ordinary skill in the art in the invention of Pan '525 to use chlorine as alternative to fluorine because chlorine improves the robustness of the gate oxide.

Pan '525 does not disclose ion implantation technique. Pan '435 discloses a method of forming a transistor gate by the following process steps: Forming gate oxide; forming gate

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electrode "16" on the gate oxide: performing oblique implantation at an angle as low as 7 degrees with fluorine ions "18" beneath the edges at dose of $1E14$ to $1E16/ cm^2$ to inherently produce a concentration same as claimed(see abstract, fig.1 b, col.6, lines 6-59). It would have been obvious to perform ion implantation as an alternative to diffusion step in Pan '525, as taught by Pan '435.

“
Sugino et al disclose a method of making MOSFETs by the following process steps:
forming gate oxide; providing chlorine into gate oxide followed by gate electrode. It would have been obvious to one of ordinary skill in the art to provide chlorine in gate oxide first and then followed by gate electrode because Sugino teaches process of providing chlorine in gate oxide followed by gate electrode suitable MOSFETs(see figs detailed description). Suzuki et al also teaches heat treating silicon oxide in halogen containing atmosphere(see abstract).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ngaoaram teaches fluorination of gate oxide. Pan 726 discloses a method of forming thin conformal oxide layer containing fluorine to minimize parasitic capacitance, but Pan '726 does not disclose any annealing step to diffuse fluorine into gate oxide.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 51-77 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 22-30 of co-pending Application No.09/332,255. Although the conflicting claims are not identical, they are not patentably distinct from each other because the language “comprising” in instant claims 51-61 can have additional process steps of sidewall spacers to diffuse chlorine or fluorine into gate oxide, as recited in pending claims 22-30 in application 08/993663. Similarly, “diffusing” and “doping” in claims 51-77 is effecting step of causing step of “annealing” in claims 22-30 in pending parent application 09/332,255.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Applicant's arguments with respect to claims 51-77 have been considered but are moot in view of the new ground(s) of rejection.

Response to the applicant arguments:

Applicant argues that none of the references teach providing chlorine and fluorine into gate oxide and then forming gate electrode. Such teaching is mentioned in Sugino as mention above.

Applicant argues that sequentially forming gate oxide and gate electrode, wherein gate oxide layer having outwardly exposed opposing edges laterally aligned with the edges of the gate. Pan '525 clearly teaches such limitation (see fig. 1 D).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Mulpuri whose telephone number is (703) 305-5184. The examiner can normally be reached on Mon-Fri from 9 a.m. to 5.30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (703) 308-3325. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

SM

5/2/00



S. Mulpuri

Primary Examiner

Technology Center 2800